WHAT IS CLAIMED IS:

1. A method for annealing an organic film, comprising:
exposing the organic film to a vapor of a solvent for a period of time sufficient to render at least the outermost portion of the organic film insoluble in the solvent.

2. The method of claim 1 wherein the organic film includes a small-molecule material, dye, pigment, pentacene or pentacene precursor, C_{60} and/or derivatives thereof, PCBM or polymer.

3. The method of claim 2 wherein the organic film includes a polymer material.

4. The method of claim 3 wherein the polymer material is an insulating polymer.

5. The method of claim 4 wherein the insulating polymer is poly(ethylene terephthalate) (PET) and poly(ethylene 2,6-naphthalate).

6. The method of claim 3 wherein the polymer material is an electrically conducting or semiconducting polymer.

7. The method of claim 6 wherein the polymer material includes a material from the group of poly(phenylene) and derivatives thereof, poly(phenylene vinylene) and derivatives thereof (e.g., poly(2-methoxy-5-(2-ethyl-hexyloxy)-1,4-phenylene vinylene (MEH-PPV), poly(para-phenylene vinylene), (PPV)), PPV copolymers, poly(thiophene) and derivatives thereof (e.g., poly(3-octylthiophene-2,5,-diyl), regioregular, poly(3-octylthiophene-2,5,-diyl), regiorandom, poly (3-hexylthiophene) (P3HT), poly(3-hexylthiophene-2,5-diyl), regioregular, poly(3-hexylthiophene-2,5-diyl), regiorandom), poly(thienylenevinylene) and derivatives thereof, and poly(isothianaphthene) and derivatives thereof, tetra-hydro-thiophene precursors and derivatives thereof, poly-phenylene-vinylene and derivatives organometallic polymers, polymers containing perylene units, poly(squaraines) and their derivatives, discotic liquid crystals polyfluorenes, polyfluorene copolymers, polyfluorene-based copolymers and blends, e.g. co-polymerized and/or blended with materials such as charge transporting (e.g. tri-phenyl-amines and derivatives) and/or light-absorbing compounds (e.g. fused thiophene rings and derivatives, generally hetero-atom ring compounds with or without substituents).

8. The method of claim 1 wherein the solvent is an organic solvent.

9. The method of claim 8 wherein the organic solvent is selected from the group of acetone, chloroform, benzene, cyclohexane, dichloromethane, ethanol, diethyl ether, ethyl acetate, hexane, methanol, toluene, xylene, mixtures of two or more of these, and derivatives of one or more of these.

10. A method for forming an organic film, comprising:
placing a solution containing an organic material and a organic solvent on a substrate;
evaporating the solvent from the solution leaving an organic film on the substrate;
annealing the organic film by exposing it to a vapor of a second solvent for a period of time sufficient to render at least an outermost portion of the organic film insoluble in the solvent.

11. The method of claim 10 wherein the organic material includes a pigment, small-molecule material, dye, pentacene or pentacene precursor, C_{60} and/or derivatives thereof, PCBM or polymer.

12. The method of claim 11 wherein the organic material is an insulating polymer.

13. The method of claim 12 wherein the insulating polymer is poly(ethylene terephthalate) (PET) and poly(ethylene 2,6-naphthalate).

14. The method of claim 10 wherein the organic material is a conducting polymer from the group of poly(phenylene) and derivatives thereof, poly(phenylene vinylene) and derivatives thereof (e.g., poly(2-methoxy-5-(2-ethyl-hexyloxy)-1,4-phenylene vinylene (MEH-PPV), poly(para-phenylene vinylene), (PPV)), PPV copolymers, poly(thiophene) and derivatives thereof (e.g., poly(3-octylthiophene-2,5,-diyl), regioregular, poly(3-octylthiophene-2,5,-diyl), regiorandom, poly (3-hexylthiophene) (P3HT), poly(3-hexylthiophene-2,5-diyl), regioregular, poly(3-hexylthiophene-2,5-diyl), regiorandom), poly(thienylenevinylene) and derivatives thereof, and poly(isothianaphthene) and derivatives thereof, tetra-hydro-thiophene precursors and derivatives thereof, poly-phenylene-vinylene and derivatives organometallic polymers, polymers containing perylene units, poly(squaraines) and their derivatives, discotic liquid crystals polyfluorenes, polyfluorene copolymers, polyfluorene-based copolymers and blends, e.g. co-polymerized and/or blended with materials such as charge transporting (e.g. tri-phenyl-amines and derivatives) and/or light-absorbing compounds (e.g. fused thiophene

rings and derivatives, generally hetero-atom ring compounds with or without substituents).

15. The method of claim 10 wherein the first or second solvent is an organic solvent.

16. The method of claim 15 wherein the organic solvent is selected from the group of is selected from the group of acetone, chloroform, benzene, cyclohexane, dichloromethane, ethanol, diethyl ether, ethyl acetate, hexane, methanol, toluene, xylene, mixtures of two or more of these, and derivatives of one or more of these.

17. The method of claim 10 wherein the first and second solvents are the same solvent.

18. The method of claim 15 wherein the first and second solvents are both chloroform ($CHCl_3$).

19. The method of claim 10 wherein the first and second solvents are different solvents.

20. A method for making a device, comprising:
placing a first solution containing a first organic material and a first solvent on a first substrate;
evaporating the first solvent from the first solution leaving a film of the first organic material on the substrate;
annealing the first film of the first organic material by exposing it to a vapor of a second solvent for a period of time sufficient to render at least an outermost portion of the film of the first organic material insoluble in the first or second solvent
placing a second solution containing a second organic material and a second solvent on a second substrate;
disposing the first and second substrates in proximity to each other with the film of the first organic material and the second solution disposed between the first and second substrates.

21. The method of claim 20, further comprising pressing the first and second substrates together.

22. The method of claim 20 wherein annealing the film of the first organic material by exposing it to a vapor of a second solvent occurs after the first and second substrates have been pressed together.

23. The method of claim 20 wherein the first substrate is a nanostructured material having pores, channels, cavities, or tubes with diameters between about 1 nm and about 100 nm, with a pore density between about 10^{12} pores per square meter and about 10^{16} pores per square meter.

24. The method of claim 23 wherein the first organic material infiltrates the pores, channels, cavities, or tubes in the nanostructured material.